

**Official Amendment**

Serial No. – 10/038,150

Docket No. – UVD 0299 PA

**REMARKS**

Claims 1, 3-53, and 123-126 are pending in the present application. Reexamination and reconsideration are requested in light of the accompanying remarks.

The rejection of claims 1, 3-10, 12-31, 33, 35-43, and 123-126 under 35 U.S.C. § 102(b) as being anticipated by Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621 is respectfully traversed.

As explained previously, Applicants discovered in preparing the Amendment filed May 17, 2005, that the substitute specification filed on February 28, 2002 in response to the Notice to File Corrected Application Papers, and which included the discussion of the Japanese patents cited by the examiner, was not the application as filed, but was an earlier draft version instead. The substitute specification which was filed June 30, 2005, and which is identical to the specification as originally filed, does not include the discussion of the Japanese patents. Because the discussion of the Japanese references contained in the substitute specification filed on February 28, 2002 was not in the application as filed, it was new matter. The introduction of new matter in an amendment is prohibited, and it must be canceled. 35 U.S.C. § 132, MPEP 2163.06.

Therefore, specification does not have any description of the Japanese patents, and the examiner improperly cited p. 9 and 10 of the February 28, 2002 specification in rejecting the claims.

The examiner stated that "Applicant's arguments that since all mention of the admitted prior art of the instant disclosure (Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621) in the specification have been removed, that the Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621 cannot be relied upon to anticipate the instant claims is not persuasive because applicant's description of these references in the manner relied upon by the examiner are of record in the instant application." Applicants did not state and do not suggest that the Japanese patents cannot be relied upon by the examiner. However, the examiner is not relying

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on the references themselves to reject the claims, but rather on erroneous statements which were removed from the specification before filing. In the rejection, the examiner stated:

Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621, *as described in pages 9 and 10 of the specification submitted by the applicant on 3/7/2002 for example*, teaches compositions for seals which meet the requirements of the instant claims, including both a trivalent cobalt compound and a valence stabilizer compound.

Because the statements in the February 28, 2002 specification were new matter and thus are not part of the specification, they cannot be relied on by the examiner.

The Chemical Abstracts summary of JP 77 06,258 states:

Anodized Al and its alloys are electrochem. sealed using a.c. or periodic polarity reversal reversal d.c. in an alk. soln. contg. inorg. acid salt(s) of polyvalent ( $\geq 2$ ) metal(s) and amine. The sealed Al and its alloys exhibit good corrosion resistance. Thus, Al anodized in an aq. 10% H<sub>2</sub>SO<sub>4</sub> soln. (at 1 A/dm<sup>2</sup> for 30 min) was washed well, the a.c. electrolytically treated in an aq. soln. contg. 0.5% Co phosphate and 3% NH<sub>3</sub> at 20 V for 3 min, then washed, and dried at 50°. The sealed Al had better corrosion resistance than the control which was sealed in aq. 3% H<sub>2</sub>SO<sub>4</sub> soln. contg. 0.5% Co phosphate.

The Chemical Abstracts summary of JP 76 42,057 states:

Anodized Al and its alloys are cathodically or a.c. treated in an aq. soln. of metal (valency  $\geq 2$ ) salts of org. acid(s) to seal pin-holes in the anodic oxide layer. The method effectively removes acid trapped in the pin-holes and hence improves the corrosion resistance of the anodized Al. Thus, an anodized Al sheet was a.c. treated 5 min at 30 V in an aq. 0.2% Co acetate soln., and treated 5 min in 95° distd. water: the Al sheet did not corrode even after 30-h CASS test, or after 1-yr exposure to direct sunlight at a beach.

The Chemical Abstracts summary of JP 74 34,929 states:

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Al is colored by electrolysis following hot hydrolysis treatment of anodized Al in either aq. soln. of the acid salt of an org. amine or a soln. obtained by adding a water sol. compd. contg. a metal with oxidn. state  $\geq 2$  to the former soln. Optionally, the anodized Al is electrophoretically coated with a water-based resin paint after dipping in the above solns. used for the hydrolysis treatment. Thus anodized Al was immersed for 15 min in a bath contg. aniline sulfate 4,  $\text{H}_2\text{SO}_4$  3,  $\text{CoSO}_4$  1,  $\text{CuSO}_4$  0.3%, rinsed, heated for 5 min in hot water ( $90^\circ$ ) contg. 0.05%  $\text{N}(\text{CH}_2\text{CH}_2\text{OH})_3$ , rinsed, coated (anodically) with a 10% water-based acrylic paint using a d.c. of 150 V for 2 min, rinsed, and baked at  $180^\circ$  for 20 min. A brown uniform coating (10  $\mu$  thick) was obtained which was stable to exposure to light from a Xe lamp for 5000 hr, to 5% NaOH for 12 hr, and to 5%  $\text{H}_2\text{SO}_4$  for 24 hr.

The Chemical Abstracts summary of JP 74 14,621 states:

The treatment is characterized by immersing the anodized Al or its alloys in an aq. soln. contg. hydrazine  $> 0.001$  g/l. and Ni or Co salt  $> 0.001$  g/l. To the soln., sulfosalicylic acid, sulfosalicylate, or aminopolycarboxylic acid  $> 0.001$  g/l. may also be added to increase the sealing effects. The Ni and Co salts may be acetates or sulfates. The anodic oxide film has an improved resistance against alkalies and a clean surface appearance. Thus, extruded Al was subjected to anodic oxidn. treatment in an aq. soln. contg. 15 wt.%  $\text{H}_2\text{SO}_4$ , and kept at  $20^\circ$  at the c.d. 13 A/dm<sup>2</sup> for 30 min, and then subjected to sealing treatment by immersion in an aq. soln. contg. 5 cm<sup>3</sup>/l. 80% hydrazine, Ni acetate 0.8, sulfosalicylic acid 0.5, and EDTA 0.5 g/l. at  $100^\circ$ . The treatment resulted in good appearance and improved resistance against alkalies.

In the compounds taught in the Japanese patents, cobalt acetate, cobalt sulfate, and cobalt phosphate, the cobalt is in the +2 state. The cobalt compounds used in the Japanese patents do not teach raising the oxidation state of the cobalt to a +3 oxidation state and keeping it there.

The present application specifically calls for a cobalt ion that is at a higher oxidation state (trivalent and tetravalent cobalt) than is typical (divalent). The high oxidation states of these ions

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are by their very nature metastable under typical aqueous solution conditions. These ions need to be treated specially as described in the application to retain their high oxidation state until needed. None of this is taught in the Japanese patents.

The indication of polyvalent ions in JP 77 06,258, 76 42,057, and 74 34,929 does not imply highly oxidized metal species. Polyvalent metal ion simply means that the ion may have a charge of greater than 2. This might be an aluminum ion of +3, a titanium ion of +4, and so on. The existence of a polyvalent charge does not imply oxidative capability. A very good example of this is chromium 3+, the reduced form of the very toxic chromium 6+. Chromium 3+ is inert and is actually a necessary mineral for human health. The polyvalent 3+ charge does nothing to prevent corrosion.

None of the Japanese patents teaches raising and keeping the oxidation state of the cobalt to +3 so that their material would be effective as a corrosion inhibitor. If one of the ions in the Japanese patents happened to be in a higher oxidation state (for the sake of argument), then the Japanese patents do not teach how to keep the high oxidation state until it is needed. The Japanese patents lack the valence stabilizers that are needed to keep the corrosion inhibition functionality after the solutions have been applied to the metal surfaces as is specifically described in the present application.

JP 74 14,621 describes the use of hydrazine, which is a very toxic reducing agent. Its use and presence in a coating violates a basic feature of the claimed invention: it is a reducing agent. In the claimed invention, the cobalt should remain as oxidized as possible until it is available to be reduced at the bare metal surface. Hydrazine would reduce the oxidation state of the cobalt ion before it could be useful in protecting the metal surface. The presence of this reducing agent in an otherwise oxidized system would hinder the chemical protection offered by the oxidizer and would very likely worsen the degree of corrosion through the well known and understood mechanism of “dangerous inhibition” where there is a lack of sufficient oxidizer to protect the surface. The lack of sufficient oxidizer results in an incompletely oxidized metal surface and has been frequently demonstrated to cause severe pitting corrosion that results in a greater loss of strength than if nothing had been done to the scratch.

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In addition, the Japanese patents do not teach about availability of the oxidizing species during exposure to water. There are no solubility control agents.

Moreover, the Japanese patents do not mention the functional attributes necessary even for a cobalt +3 compound. Many cobalt +3 compounds themselves are unsuitable in rinses and seals because their solubility is either too high (i.e., cobalt(III) hexamine chloride) or too low (i.e.,  $\text{Co}^{\text{III}}\text{OOH}$ ) in the formed coating. Tailoring to meet the physicochemical requirements is therefore frequently needed. The physicochemical requirements as well as any tailoring requirements are not discussed in the Japanese patents.

Thus, the Japanese patents do not teach the claimed invention. The Japanese patents do not teach trivalent or tetravalent forms of cobalt. The cobalt compounds (sulfate, acetate, phosphate) cited in the Japanese patents cannot thermodynamically exist as a +3 compounds. There are no oxidizers in the Japanese patents, and one cites a very strong reducing agent. The Japanese patents do not teach valence stabilizers, or solubility control agents. Furthermore, the functional attributes necessary are not even mentioned.

Therefore, claims 1, 3-10, 12-31, 33, 35-43, and 123-126 are not anticipated by Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621.

The rejection of claims 44-53 under 35 U.S.C. §103(a) as being unpatentable over Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621 in view of Ouyang (U.S. Patent No. 5,505,792) is respectfully traversed. Ouyang is cited as teaching coloring and coloring additive for conversion coatings. However, Ouyang does not remedy the deficiencies of Japanese patents 77 06,258, 76 42,057, 74 34,929, and 74 14,621. Therefore, claims 44-53 would not have been obvious to one of ordinary skill in the art at the time the invention was made.

Applicants gratefully acknowledge the examiner's statement that claims 11, 32, and 34 would be allowable in rewritten in independent form including all of the limitations of the base claim and any intervening claims. However, this was not deemed necessary. In the Amendment dated May 17, 2005, previous versions of claims 11 and 32, which had no prior art rejections,

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were rewritten as claims 124 and 125 respectively. Therefore, claims 124 and 125 are believed to be allowable.

**CONCLUSION**

Applicants respectfully submit that, in view of the above remarks, the application is now in condition for allowance. Applicants respectfully request that claims 1, 3-53, and 123-126 be passed to allowance.

If the Examiner has any questions or comments regarding the present application, he is invited to contact the undersigned attorney at the telephone number indicated below.

Respectfully submitted,  
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